

# JOURNAL OF BIOENERGETICS AND BIOMEMBRANES Volume 30, 1998

*Journal of Bioenergetics and Biomembranes* is an international journal devoted to the publication of original research that contributes to fundamental knowledge in the areas of bioenergetics, membranes, and transport. The subspecialties represented include membrane transport, electron transport, ATP synthesis by oxidative or photophosphorylation, muscle contraction, and biomembranes.

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Front outside cover: **Proton transfer paths in cytochrome *c* oxidase.** (Fig. on left) Putative D- and K-pathways of proton transfer are indicated in red. The illustration was made using the Visual Molecular Dynamics Software (Univ. of Illinois; see Brzezinski and Ådelroth, p. 99) on the basis of the atomic coordinates from Tsukihara *et al.* (Science (1996) 272, 1136–1144). Amino acid numbering refers to the enzyme from *Rhodobacter sphaeroides*. **Electron transfer paths in cytochrome *c* oxidase.** (Fig. on right) The figure shows the best path coupling Cu<sub>A</sub> to heme *a* on the left (red); the best path connecting heme *a* (left) to heme *a*<sub>3</sub> (right) is also shown in red below. A direct path coupling Cu<sub>A</sub> to heme *a*<sub>3</sub> on the right (blue) is less favorable due to the Mg ion (grey). The illustration (see Regan *et al.*, p. 35) is based on the atomic coordinates from Tsukihara *et al.* (Science (1996) 272, 1136–1144).



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*Front outside cover: Top*, Proposed secondary structure model of the thyroid Na<sup>+</sup>/I<sup>-</sup> symporter (NIS). Initial coordinates were obtained with the program QUANTA (Molecular Simulations Inc., Burlington, Mass.). Regularization of the model was carried out with the program "O" (Dai *et al.*, 1996). Graphics were carried out with the program SETOR (Dai *et al.*, 1996). Membrane-spanning helices are depicted in red. The color code for amino acids is: Trp, green; Leu, Ile, Phe, and Tyr, yellow; Asp and Glu, red; Arg, Lys and His, blue; remaining amino acids, grey. In Asp 16 and Glu 79 carbon atoms are depicted white and oxygen atoms purple. In Arg 208 carbon atoms are white and nitrogen atoms blue. *Bottom*, for details refer to legend in Figure 1B, (see Levy *et al.*, p. 195).

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*Front outside cover:* The cover figure illustrates P/Q-type calcium channels in the dendritic field of cerebella granule cells. Different colors represent channel density. The high intensity spots are nerve terminals. (From the article entitled 'Physical Link and Functional Coupling of Presynaptic Calcium Channels and the Synaptic Vesicle Docking/Fusion Machinery,' Sheng *et al.*, p. 335).

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*Front outside cover:* Surface rendered depictions of 3-D reconstruction of mitochondria after the volumes were segmented by manually contouring the regions bounded by the outer, inner, and cristal membranes. Inner boundary and cristal membranes are continuous surfaces but were segmented to highlight separate topographies. Distinct cristae were segmented independently to examine membrane morphology and connectivity and are displayed using different colors. (From the article entitled 'Electron Tomography of Mitochondria from Brown Adipocytes Reveals Crista Junctions,' Perkins *et al.*, p. 431).



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*Front outside cover:* The cover figure is a snapshot model for a lipid-mediated State 4 proton-selective leak in high-cardiolipin mitochondria from thyroid-responsive tissues. Proton (blue) and electron (brick red) circuits are as in Nicholls and Ferguson (1992). Inner membrane outer-surface di-anionic cardiolipin (CLO) headgroup-network microdomains are competitive proton-concentrating antennas, yet can donate protons to CLO transient chains of (20) H-bonded water molecules in single file between the normally few CL extended fatty acyl chains (and, not shown, to protonophores and proton-transporting proteins)-a  $\Delta\psi$ -driven proton pathway to the matrix. Proton flux depends on regulable CL amounts, sidedness, and saturation. (From the article entitled 'Cardiolipins and Mitochondrial Proton-Selective Leakage,' Hoch, p. 511)